REMARKS

In response to the Notice of Appeal and request for Pre-Appeal Brief Review, the Examiner has issued an Office Action with new requirements and new grounds for rejection. Applicants will address the Examiner's points in the order presented.

Requirement for Corrected Drawings

The Examiner has required new corrected drawings for the application. Applicants respectfully traverse the requirement. In response to the Examiner's statement that the figures do not illustrate "computers having a plurality of endpoints", Applicants note that it is the network that has endpoints, endpoints being a well-known term of the relevant computer network art, and that an endpoint may be an NIC card (as taught on page 6 of the Specification) resident on a server or other computer or computer peripheral. Since the endpoints are well-known and are not the actual invention, Applicants respectfully contend that it is not necessary to illustrate each network endpoint in Fig. 1. Applicants are not claiming a network with a plurality of endpoints; rather, Applicants are claiming apparatus for identifying slow links in such a network. Similarly, the "endpoints connected by a plurality of links" is not illustrated, but need not be illustrated since it is well

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understood by those having skill in the art and is not being claimed.

With regard to the Examiner's statement that the figures do not illustrate "detecting slow links", Applicants direct the Examiner's attention to reference numerals 405 and 406 of Fig. 4. With regard to the Examiner's statement that the figures do not illustrate "determining what specific applications require access", Applicants direct the Examiner's attention to reference numeral 407 of Fig. 4 wherein the legend in the box states "INVITE RESPONSE". As detailed in the corresponding teachings found on page 13 of the Specification, the inviting of a response may include displaying the network condition to a system administrator and prompting runtime input to address the performance condition; notifying applications of the detected slow link to prompt their automatic response (which have been pre-programmed by the system administrator); or, the DKS Slow Link Manager automatically changing network behaviors (e.g., by denying application access for some applications; by selectively advertising links based on LSF and RSF thresholds; by rerouting application requested to use endpoint which result in the use of another endpoint in order to avoid the slow link; or by presenting the ranked links, slow to fast, so as to help an application choose the best suited link for the task at hand) to address the slow link condition. Applicants believe that the figures illustrates the invention as claimed.

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Requirement for Information

The Examiner has stated that the Office Action is being accompanied by a Requirement for Information. Applicants first note that no Requirement for Information accompanied the Office Action. Applicants further respectfully contend that such a Requirement is wholly inappropriate at this stage of prosecution, and submit that the requested information is already of record in the file wrapper.

In response to the Examiner's statement on page 6 that "unless the invention is created from scratch, applicant needs to provide the prior arts (sic) that have led to the invention", Applicants respectfully disagree. It is not incumbent on the Applicants to supply background teachings which are well known in the relevant art. Applicants have a duty to disclose information which is "material to the patentability" of the claimed subject matter (see: 37 CFR 1.56 and MPEP 2001(a)). As further detailed in MPEP 704, a Requirement for Information under 1.105 may be issued by the patent examiner prior to or with a first Office Action. To suggest that the application cannot be examined without additional information seems inappropriate at this stage of the prosecution of the application, after the application has been examined, has been finally rejected, has been the subject of a Notice of Appeal and Pre-Appeal Brief Review, and has had prosecution reopened. If the Examiner did not understand the

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background art, a Requirement for Information should have been made earlier, prior to requiring Applicants to spend considerable time, effort and filing fees to advance prosecution of the application.

Applicants further assert that the requested information has already been provided to the patent examiner, in the Information Disclosure Statement filed on January 10, 2001. The cited patents provide detail for various network speed measurement techniques.

Nonetheless, Applicants provide, herewith, a copy of an article by Curtis, et al entitled "Review of Bandwidth Estimation Techniques" and an article by Robert Carter, et al entitled "Measuring Bottleneck Link Speed in Packet-Switched Networks" to provide overview information to the examiner.

Objections to the claims

The Examiner has objected to Claims 1, 15, 17 and 28 because of informalities. Specifically, the Examiner requires that the term "comparing...to" be changed to "comparing...with". Applicants have amended the relevant claims to address this objection.

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Rejections under 35 USC 101

With regard to Claims 1-8 and 28, the Examiner has concluded that the method claims do not produce a tangible result. With regard to Claims 1 and 28, the Examiner states that comparing alone does not produce a tangible result. While the comparing of link speeds does, indeed, produce a tangible result of identifying a slow link, Applicants have, nonetheless, amended the claim language to include the limitations of designating slow links based on the comparison results, and providing notification of designated slow links. Sending notification is clearly a tangible result.

The Examiner further states that "the steps of the claims (body of the claims) need hardware to perform the steps". Applicants request clarification of this remark. Applicants have amended the claims to recite "[A] computer implemented method", although Applicants respectfully assert that computer implemented methods can be implemented in hardware and/or software. Applicants also note that the cited Li and Chirashnya patents recite method steps without explicit recitation of hardware. Accordingly, Applicants traverse the Examiner's rejection.

With regard to Claims 11-12, 14-16 and 30, the Examiner concludes that the claims "implement steps of a method that contain (sic) adjusting that do not produce a tangible result." Applicants disagree. Adjusting application usage of a detected slow link does produce a tangible result. The clear tangible

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results is that the detected slow link is not used by the application or is used less by the application. The result of enhanced application performance is undeniable for anyone who has ever worked with computers. Applicants respectfully assert that the claims recite patentable subject matter and respectfully traverse the Examiner's rejection.

Rejections under 35 USC 112

Claims 1, 11, 15, 17, 25, 28 and 30 have been rejected as failing to comply with the written description requirement. First, the Examiner states that the Specification does not contain subject matter to implement "endpoints being connected by a plurality of links". Applicants reiterate that it is well known in the art that networks have endpoints and that the endpoints are connected to the networks by links. The Examiner continues in paragraph 9 stating that " 'endpoints being connected by a plurality of links...for performing measurement at runtime of the plurality of links', 'without' the links connected between at least two entities; also, it is not apparent, to what the endpoints are being connected to" . Applicants request clarification of the rejection. Applicants are neither teaching nor claiming measurement at runtime without links being connected. Applicants do not know where the Examiner is getting the language that is being rejected and cannot, accordingly, address the rejection. Applicants believe that the Examiner has

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misinterpreted the claim language and request reconsideration of the rejection.

The Examiner further states that "defining (a single) original link speed factor for multiple links" is contrary to the specification. However, Applicants expressly recite "defining an original link speed factor for each of said plurality of links". Applicants are not claiming a single original link speed factor; they are claiming an original link speed factor for each link. Clearly the Examiner has misinterpreted the claim language. Applicants request reconsideration of the rejection.

The Examiner next rejects "runtime measurement without measuring at runtime". Applicants again note that the rejected language is not found in the claims.

The Examiner further states that "the specification does not define what "runtime measurement" is. Applicants respectfully assert that the term "runtime measurement" is known to those having skill in the art, as is evident from a review of the art cited by Applicants.

Next the Examiner states that "runtime link speed indicator" is not defined by the Specification and states that "it is not apparent how a display item (indicator) can be measured". Applicants again assert that the Examiner has misinterpreted the language of the application and of the claims. Any value that is characteristic of or indicative of runtime link speed (e.g., NIC speed, link speed, route data, as detailed at the bottom of page

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6 of the Specification) is a link speed indicator. Nothing in the use of the term "link speed indicator" suggest that a display be employed. Applicants cite the Merriam-Webster dictionary definition of indicator as a noun having the meaning:

> 4 : any of a group of statistical values (as level of employment) that taken together give an of the health of the economy.

Clearly the use of the term "link speed indicator" is consistent with the provided definition and does not suggest display.

The Examiner states that the Specification does not define "runtime link speed factor". Applicants again direct the Examiner's attention to the teachings at the bottom of page 6 which clearly detail link speed factors in terms well known in the art. Further, the Examiner again mistakenly concludes that Applicants are reciting calculation of a single speed factor, which the Specification and claims clearly recite calculating a runtime speed factor for each link. While block 404 of Fig. 4 says "calculating...factors", it is clear that one link speed factor is calculated for each link of the multiple links.

With respect to Claims 2, 3-8, 11, 14, 16, 18-22, 25 and 30, the Examiner concludes that "desired relationship" is a relative term. Applicants respectfully disagree. "Desired relationship" is a claim term which is widely used in patent claims to include both a maximum or a minimum threshold (e.g., "designate as slow if the original link speed exceeds the calculated link speed by

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an amount 'x'" or, alternatively, "designate as slow if the calculated link speed is less than the original link speed by an amount factor of 'y'"). Applicants contend that the use of the term is not indefinite and would enable one having skill in the art to practice the invention.

With regard to the term "the designated slow links", Applicants have amended the relevant claims to appropriately recite "the at least one designated slow link". Applicants believe that the amendments address the antecedent basis concerns.

With regard to the use of the term "said system administrator" in Claim 8, the claim has been amended to appropriately depend from Claim 7.

With regard to the use of the term "slow link" in Claims 11, 25, and 30 as being a relative term, Applicants believe that the use of the term is definite and fully enabling for one having skill in the art.

Claim 14 has been amended to address the concern with the use of the term "the detection of slow links".

Claim 25 has been amended to address the concern with the use of the term "said detected slow links".

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Rejection under 35 USC 103

Claims 1-6, 11, 12, 15-20, 25-26, 28 and 30 have been rejected under 35 USC 103 as being unpatentable over Li in view of "Official Notice". The Li patent id directed to a method for providing admission control (AC) for service requests based on bandwidth. Li defines "...an admit limit (AL) representing a bandwidth utilization capacity allocated to a service offered on the weakest link of the network". When a request for the service is received, the required bandwidth for the request is compared to the bandwidth utilization capacity for that service. If the required bandwidth exceeds the bandwidth utilization capacity, the request is rejected.

Applicants respectfully assert that the Li patent does not teach or suggest the invention as claimed. The present invention, as taught and claimed, provides a method, system, and program storage device for performing method steps for identifying slow links in a distributed network. Under the present invention, a first step is defining an original link speed factor for each of the links in the distributed network. What Li does is define a bandwidth utilization capacity for a particular service based on the service using the weakest link in Li's network. Li does not define an original link speed factor for each link. The term "link speed" refers to a specific, measurable value, as set forth in the Specification on page 2, and does not encompass all possible values assignable to a

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network. Applicants respectfully assert that bandwidth capacity is not the same as link speed.

Applicants further note that Li does not perform at least one runtime measurement of at least one runtime link speed indicator for each of a plurality of links. Li uses its original bandwidth capacity for a service throughout its operation. While Li can "deduct" capacity from that value, based on acceptance of requests, Li does not actually measure capacity during runtime, let alone measure a runtime link speed indicator. Li compares all incoming requests, routed from the edge routers to the QoS manager, to the originally determined bandwidth utilization capacity for the requested service. The bandwidth capacity is determined based on an assumption that a particular link is the weakest link, and will always be the weakest link in the network. Li does not teach or suggest dynamically determining if a link is weak.

Applicants further contend that Li does not teach or suggest the step of calculating a runtime link speed factor based on runtime measurements. As noted above, Li relies on the predefined bandwidth capacity and does not use measurements to dynamically assess runtime link speed. Accordingly, it cannot be concluded that Li calculates a runtime link speed factor based on measurements if Li has not performed any measurements related to link speed.

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Finally, with regard to the claim feature of comparing the original link speed factor to the runtime link speed factor, Applicants reiterate that Li does not define an original link speed factor, does not measure runtime link speed and does not calculate a runtime link speed factor. Clearly, therefore, Li cannot then compare values which Li has not defined, measured, or calculated.

The Examiner has acknowledged that "Li does not specifically mention about defining the factor and the factor being original for speed". Applicants respectfully contend that the Examiner is again mistaken in interpreting the language of the claims. The claims do not recite defining a factor which is original for speed. The Specification clearly states at the top of page 10 that the original speed factor is a predicted speed for each link. Applicants have amended the claims to recite the "original link speed factor comprising a predicted speed".

The Examiner has taken "Official Notice" that "the concept and advantages of defining the factor and the factor being original for speed" are well known and that "the original value would be used to specify what the link supports for". Applicants respectfully assert that the claimed original link speed factor comprising a predicted speed is not taught or suggested by the art of which the Examiner takes "Official Notice".

Appellants contend that obviousness cannot be maintained without some teaching or suggestion of the claim features. The
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Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." (In re Lee, 277 F. 3d 1338, 1343 (Fed. Cir. 2002)). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority" (Id. at 1343-1344).

For a determination of obviousness, the prior art must teach or suggest all of the claim limitations. "All words in a claim must be considered in judging the patentability of that claim against the prior art" (In re Wilson, 424 F. 2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). If the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner. Since neither the Li patent nor the art of which the Examiner takes "Official Notice" teaches the claimed steps or means for defining an original link speed factor for each link, performing at least one runtime measurement for each link, calculating a runtime link speed factor for each link, and comparing the calculated runtime link speed factor to the original link speed factor, it cannot be concluded that a prima facie case of obviousness has been established against

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independent Claims 1, 17 and 28, or the claims which depend therefrom and add limitations thereto (Claims 2-8, 18-22), or those claims which recite parallel limitations (Claim 15).

With regard to the language of independent Claims 11, 25 and 30, and the claims which depend therefrom (Claims 12-16 and 26-27) and those claims which also recite application-based response to detected slow links (Claims 4-6, 8, and 20), Applicants again note that the Li patent does not teach the claimed step or means for detecting at least one slow link in the distributed network. Applicants rely on the arguments set forth above with respect to that claim feature. Further, Applicants contend that the Li patent neither teaches nor suggests the step for each detected slow link of determining what specific applications require access to the detected slow link and adjusting application usage of the detected slow link by the specific applications. The Examiner has concluded that the Li passage, from the Abstract, which mentions "dynamic bandwidth adjustment" anticipates "dynamically adjusting application usage". Applicants respectfully disagree. The only dynamic bandwidth adjustment performed by Li is deducting required bandwidth for a request from the bandwidth utilization capacity when a request is accepted. Li does not dynamically adjust bandwidth based on measured or detected bandwidth, and clearly does not dynamically adjust based on measured link speed. Moreover, what Li teaches is that requests are either accepted or

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rejected based on the bandwidth required for the request as compared to the bandwidth utilization capacity which was predefined based on a predetermined weakest link in the network. Li does not teach or suggest adjusting application usage of links. Applicants reiterate that anticipation under 35 USC 102 can only be maintained if the reference teaches each and every claim feature. Li does not teach or suggest adjusting application usage, either by a system administrator or the application itself, in response to dynamic detection of slow links. Accordingly, Applicants conclude that the Li patent does not anticipate the language of Claims 11-16, 25-27, 30, or those claims which also recite application-based response to detected slow links (Claims 4-6, 8, and 20).

Claims 7, 8, 13, 14, 21, 22, and 27 have been rejected under 35 USC 103 as unpatentable over Li in view of Official Notice as above and further in view of Ganz. Applicants rely on the arguments set forth above with regard to the teachings of the Li patent. Further, Applicants assert that the Ganz patent does not provide those teachings which are missing from the Li patent. Ganz is cited for its teachings related to an administrator identifying slow links and altering application usage of slow links. Applicants first note that the claim language does not recite that a system administrator identifies slow links. Rather, the claim language calls for the system administrator to be notified of designated slow links and to perform altering of

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application usage of the designated slow links. Moreover, the Ganz patent does not provide that a system administrator alter application usage of slow links based on dynamic detection of slow links based on link speed measurements. Ganz, like Li, looks to bandwidth capacity, which is not the same as or suggestive of link speed.

Claims 1-8, 11-22, 25-28, and 30 have been rejected under 35 USC 103 as unpatentable over Chirashnya in view of Official Notice. The Chirashnya patent is directed to a system and method to detect faulty switch adapters. Chirashnya has multiple nodes transmit packets through a switch adapter which is to be tested and then detects, at the packet destination, whether a bad packet has been received. If a bad packet is detected, the source (i.e., the faulty switch adapter) is identified. Alternatively, the packets arriving at the destination are counted, and a faulty switch adapter is identified if fewer packets arrived than were sent.

Applicants respectfully assert that the Chirashnya patent does not teach the claim features. Chirashnya does not teach the claimed steps or means for defining an original link speed factor for each link, performing at least one runtime measurement for each link, calculating a runtime link speed factor for each link, and comparing the calculated runtime link speed factor to the original link speed factor. Applicants reiterate that "link speed" is carefully chosen language which does not encompass all

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attributes for characterizing a network. The claimed invention expressly defines, measures, calculates and compares link speeds. In contrast, Chirashnya sends packets through a switch adapter and then counts or evaluates the integrity of packets at the destination. Since Chirashnya does not define an original link speed, does not perform runtime measurements of link speed indicators and calculate runtime link speeds based on those measurements, and does not compare original to runtime link speeds, it cannot be maintained that Chirashnya anticipates the language of independent Claims 1, 17 and 28, or the claims which depend therefrom and add limitations thereto (Claims 2-8, 18-22), or those claims which recite parallel limitations (Claim 15).

The Examiner has acknowledged that "Chirashnya does not specifically mention about defining the factor and the factor being original for speed". Applicants respectfully contend that the Examiner is again mistaken in interpreting the language of the claims. The claims do not recite defining a factor which is original for speed. The Specification clearly states at the top of page 10 that the original speed factor is a predicted speed for each link. Applicants have amended the claims to recite the "original link speed factor comprising a predicted speed".

The Examiner has taken "Official Notice" that "the concept and advantages of defining the factor and the factor being original for speed" are well known and that "the original value would be used to specify what the link supports for". Applicants

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respectfully assert that the claimed original link speed factor comprising a predicted speed is not taught or suggested by the art of which the Examiner takes "Official Notice". Again, Applicants conclude that the Examiner has not established a *prima facie* case of obviousness against the claim language.
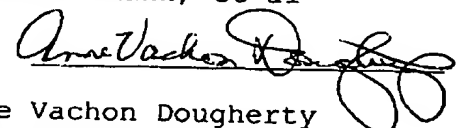
Similarly with regard to Claims 11-16, 25-27, 30, and the other claims, Claims 4-6, 8, and 20, which depend from Claims 1 and 17 and which also recite application-based response to detected slow links, Applicants respectfully assert that the combination of Chirashnya and Official Notice does not obviate the claim language. Chirashnya does not teach application-based response to faulty switch adapters. At best, in response to identification of a faulty switch adapter, packets are re-routed under the Chirashnya patent. Clearly, therefore, Chirashnya and Official Notice do not render obvious the invention as set forth in claims 4-6, 8, 11-16, 20, 25-27, and 30.

Based on the foregoing amendments are remarks, Applicants respectfully request entry of the amendments, reconsideration of the rejections, and issuance of the claims.

Respectfully submitted,

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